energy density over a first spatial spot size, the first energy density being greater than the first conductor ablation energy threshold;

applying the first laser output to the target to remove the first conductor layer within a [first] spot area of the target;

changing the first repetition rate of the nonexcimer laser to a second repetition rate greater than the first repetition rate to decrease the first energy density to a second energy density over a second spatial spot size, the second energy density being less than the first and second conductor ablation energy thresholds;

generating, from the nonexcimer laser at the second repetition rate, a second laser output having a wavelength of less than 400 nm and containing at least one second laser pulse having [a] the second energy density [over a second spatial spot size], the second energy density being [less than the first and second conductor ablation energy thresholds and] greater than the dielectric ablation energy threshold; and

C1 cont'd

applying the second laser output to the target to remove the dielectric layer within [a second] the spot area of the target and, as a consequence of the second energy density being less than the second conductor ablation energy threshold, to leave the second conductor layer substantially unvaporized and thereby form a depthwise self-limiting blind via.

C2

4. (Three times amended) The method of claim 1 in which the first and second laser pulses have a temporal pulse width shorter than about 100 ns, the first and second laser outputs have an average output power of greater than about 100 mW measured over their respective spatial spot sizes[, the first laser pulse is generated at a first repetition rate of greater than about 1 kHz and the second laser pulse is generated at a repetition rate that is significantly different from the first repetition rate].

C3

23 ~~22~~. (Amended) The method of claim 1 in which the second conductor layer absorbs at the wavelength of the second laser output and the second energy density remains below the ablation energy threshold of the second conductor layer.

31

Cancel claim 23.

Amend claim 24.

C4

24. (Amended) The method of claim [23] 1 in which the first and second laser outputs are generated by a solid-state, Q-switched laser.

Cancel claims 25, 27, 28, and 30.

Add the following claims:

C5

--31. A method for laser machining a blind via in a multilayered target including at least first and second conductor layers having respective first and second conductor ablation energy thresholds and a dielectric layer having surfaces and a dielectric ablation energy threshold, the first and second conductor layers positioned above and below, respectively, the surfaces of the dielectric layer, comprising:

generating, from a nonexcimer laser at a repetition rate of greater than about 200 Hz, a first laser output having a wavelength of less than 400 nm and containing at least one first laser pulse having a first energy density over a first spatial spot size and a temporal pulse width shorter than about 100 ns, the first energy density including an average output power of greater than about 100 mW measured over the first spatial spot size and being greater than the first conductor ablation energy threshold;

applying the first laser output to the target to remove the first conductor layer within a spot area of the target;

generating from a nonexcimer laser at a repetition rate greater than about 200 Hz, a second laser output having a wavelength of less than 400 nm and containing at least one second laser pulse having a second energy density over a second spatial spot size and a temporal pulse width shorter than about 100 ns, the second energy density including an average output of greater than 100 mW, being greater than the dielectric ablation energy threshold, and being different from the first energy density; and

applying the second laser output to the target to remove the dielectric layer within the spot area of the target to form a blind via.--

27 ~~--32~~. The method of claim ~~31~~ 26 for laser machining a depthwise self-limiting blind via in which the first and second conductor ablation

32

energy thresholds exceed the dielectric ablation energy threshold, further comprising:

after removing the first conductor layer within the spot area, increasing the first repetition rate of the nonexcimer laser to the second repetition rate to decrease the first energy density to the second energy density, the second energy density being less than the first and second conductor ablation energy thresholds;

generating the second laser output at the second repetition rate; and

applying the second laser output to the target to remove the dielectric layer within the spot area of the target and, as a consequence of the second energy density being less than the second conductor ablation energy threshold, to leave the second conductor layer substantially unvaporized and thereby form a depthwise self-limiting blind via.--

--33. The method of claim 31 for laser machining a depthwise self-limiting blind via in which the first and second conductor ablation energy thresholds exceed the dielectric ablation energy threshold, further comprising:

positioning the target at a first distance relative to a focal plane of the nonexcimer laser prior to applying the first laser output;

positioning the target at a second distance, different from the first distance, relative to the focal plane prior to applying the second laser output to increase the first spatial spot size of the first laser pulse to the second spatial spot size of the second laser pulse to decrease the first energy density to the second energy density, the second energy density being less than the first and second conductor ablation energy thresholds; and

applying the second laser output at the second spatial spot size to the target to remove the dielectric layer within the spot area of the target and, as a consequence of the second energy density being less than the second conductor ablation energy threshold, to leave the second conductor layer substantially unvaporized and thereby form a depthwise self-limiting blind via.--

C5

33

--34. A method for laser machining a depthwise self-limiting blind via in a multilayered target including at least first and second conductor layers having respective first and second conductor ablation energy thresholds and a dielectric layer having surfaces and a dielectric ablation energy threshold, the first and second conductor layers positioned above and below, respectively, the surfaces of the dielectric layer and the first and second conductor ablation energy thresholds exceeding the dielectric ablation energy threshold, comprising:

positioning the target at a first distance relative to a focal plane of a nonexcimer laser to determine a spatial spot size of a first laser output;

generating, the first laser output from the nonexcimer laser at a first repetition rate of greater than about 200 Hz, the first laser output having a wavelength of less than 400 nm and containing at least one first laser pulse having a first energy density over the first spatial spot size, the first energy density being greater than the first conductor ablation energy threshold;

applying the first laser output to the target to remove the first conductor layer within a spot area of the target;

positioning the target at a second distance, different from the first distance, relative to the focal plane to increase the first spatial spot size of the first laser pulse to a second spatial spot size to decrease the first energy density to a second energy density over the second spatial spot size, the second energy density being less than the first and second conductor ablation energy thresholds;

generating, from the nonexcimer laser, a second laser output having a wavelength of less than 400 nm and containing at least one second laser pulse having the second energy density, the second energy density being greater than the dielectric ablation energy threshold; and

applying the second laser output to the target to remove the dielectric layer within the spot area of the target and, as a consequence of the second energy density being less than the second conductor ablation

CS

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